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Modern-day rainmakers study particles in clouds

Alberta rainmakers can finally prove their efforts produce more than just a drop in the bucket.

Three years of research by the Alberta Research Council has found dropping dry ice particles and silver iodide from a plane onto a certain type of cloud will make it rain where it would not otherwise have rained.

The results are the "closest to conclusive proof" scientists anywhere in the world have ever presented for the success of cloud seeding, said James Renick, the agency's manager of storm formation and field operations.

A cloud seeded with only a few grams of silver iodide can release 1 200 cubic metres of water. When spread over 1 000 square kilometres it may represent only a few milimetres of rain, "but if we could seed a number of clouds we could help the farmers a great deal".

The Alberta researchers are working on measuring the "seeding window", how big the clouds must be and how long they must last to be rain producers. Especially important is a cloud census. "We don't know how often these clouds occur. Are there hundreds or thousands? Some of them form rain on their own. Are there enough of the clouds that we can make a significant difference in rainfall?" Mr. Renick asked.

Hail suppression

The Alberta researchers are also hoping for a breakthrough on another, more controversial front, a study of hail suppression.

On the prairies, where hail stones can reach the size of tennis balls, the ability to head off a hail storm before it reaches crop land has more than esoteric interest. Hail forms when an updraft pushes ice that would normally fall and melt into rain back up into the cloud. Depending on the strength of the wind, many layers of water can freeze around the ice pellet.

"The theory behind seeding is competition." If the cloud is seeded so there are 100 times more pieces of ice, they will in theory all collect water from the cloud and make the maximum size of the hail stone smaller, Mr. Renick said. Unfortunately, it is also possible the extra stones will only add to the problem. The scientists are still trying to answer that question, Mr. Renick said. The updraft speed is important. The higher the speed to keep the ice up, the longer before the pellets fall.

But the extra weight of all the ice may counteract the wind. "You can hold one brick over your head, maybe two or three, but eventually you reach your limit." The Alberta researchers will try to determine whether this works in clouds as well.

They use instruments aboard a research plane to measure the activity inside a cloud. Lasers send 25 narrow beams into the cloud and measure the size of ice and rain particles inside. Some beams are so close together they can record particles as small as flecks of dust while others can measure hail stones a centimetre or more in diameter.

Average rates of pay across Canada

Wage Rates, Salaries and Hours of Labour, October 1983 with data on pay rates for maintenance, service and office occupations found in most industries, as well as several hundred occupations peculiar to specific industries, has been released by Labour Canada.

The publication is a series of 23 reports, 22 covering the larger urban centres and one report containing all-Canada information. Unpublished information for about 90 communities is also available.

The data was collected through an annual survey distributed among 16 300 establishments with at least 20 employees, in principal communities across the country. The information can be used in collective bargaining, wage and salary administration, human resource and policy planning, to assist in deciding on plant location and for social and economic research.

The reports, *Wage Rates, Salaries and Hours of Labour, October 1983*, can be purchased from the Canadian Government Publishing Centre, Supply and Services Canada, Hull, Quebec, K1A 0S9.

Unpublished information on communities across Canada as well as data for each province and the territories is available from the Surveys Division, Labour Data Branch, Labour Canada, Ottawa, Ontario, K1A 0J2.

Average wages for selected occupations

	Labourer non-production (hourly)	Electrical repairer (hourly)	Office boy/girl (weekly)	Clerk general office, senior (weekly)
St. John's, Nfld.	8.02	11.91	254	361
Charlottetown	8.56	13.19	–	377
Halifax-Dartmouth	8.76	12.31	248	379
Saint John, N.B.	9.49	14.69	249	385
Montreal	9.71	12.87	270	406
Quebec City	9.95	12.88	284	411
Trois-Rivières	11.27	13.55	312	408
Ottawa-Hull	9.51	13.41	268	395
Hamilton	10.77	15.42	297	408
Kitchener-Waterloo	9.63	12.86	228	356
London-St. Thomas	9.67	13.39	257	386
St. Catharines-Niagara	9.97	14.08	332	395
Thunder Bay	11.20	15.08	336	426
Toronto	9.18	12.93	253	396
Windsor	11.42	13.68	265	411
Regina	10.26	14.72	297	387
Saskatoon	10.03	14.84	289	403
Calgary	10.63	15.64	274	399
Edmonton	10.34	15.93	260	396
Vancouver	11.84	15.90	293	417
Victoria	12.22	16.45	302	381
Canada	10.03	13.97	273	398